SMARTEH®
LIVING SYSTEMS

GENERAL CATALOGUE

Product Overview

Product overview

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Smarteh Product Line

Smarteh programmable controllers are developed to offer efficiency for building automation and small automation systems. Do not be misguided by “small”, since networking capability can also support big distributed systems as well. Moreover, dedicated modules for building automation make Smarteh LPC-2 products very effective for building automation.

Openness & connectivity

Integrated or optional networking and communication possibilities allow you to create high performance and economical solutions at the same time.

Simplicity

Smarteh programmable controllers provide simple & intuitive solutions to satisfy end-user’s needs by using free programming software supporting all 5 programming languages defined in IEC 61131-3 standard.

Effectiveness

Parameterization is a candy for the integrators. It gives them possibility to simplify commissioning by making standard software for similar applications. On site commissioning is reduced to simple parameter settings.

Comfort & economy

We offer cost effective and innovative solutions to provide comfort and energy savings. In building automation many types of controls can be used. From classic light switches up to Smarteh color LCD touch button panels and touch screens. Energy savings are achieved by effective management of lighting, heating, air-conditioning, access control and other appliances, connected and controlled through our HW & SW.

1.1 STANDARDS & PROVISIONS

	LPC-2
EMC	EN 61000-6-2 (EN 50082), EN 61000-6-4 (EN 50081)
LVD	IEC 61131-2
Vibrations and climatic, mechanical	EN 60068-2-6, EN 60068-2-27, EN 60068-2-29
	LRC-2
EMC	EN 60945
LVD	IEC 61010-1
Vibrations and climatic, mechanical	IEC 68-2-6, IEC 68-2-27, IEC 68-2-14

1.2 ENVIRONMENT

		LPC-2 & **LRC-2**
Temperature	Operation	0 to 50 °C
	Storage	-20 to 60 °C
Relative humidity		max. 95%, no condensation
Permissible altitude		2000 m
Pollution degree		II
Protection class		IP 30

SMARTEH
LIVING SYSTEMS

LPC-2

Programmable Controllers

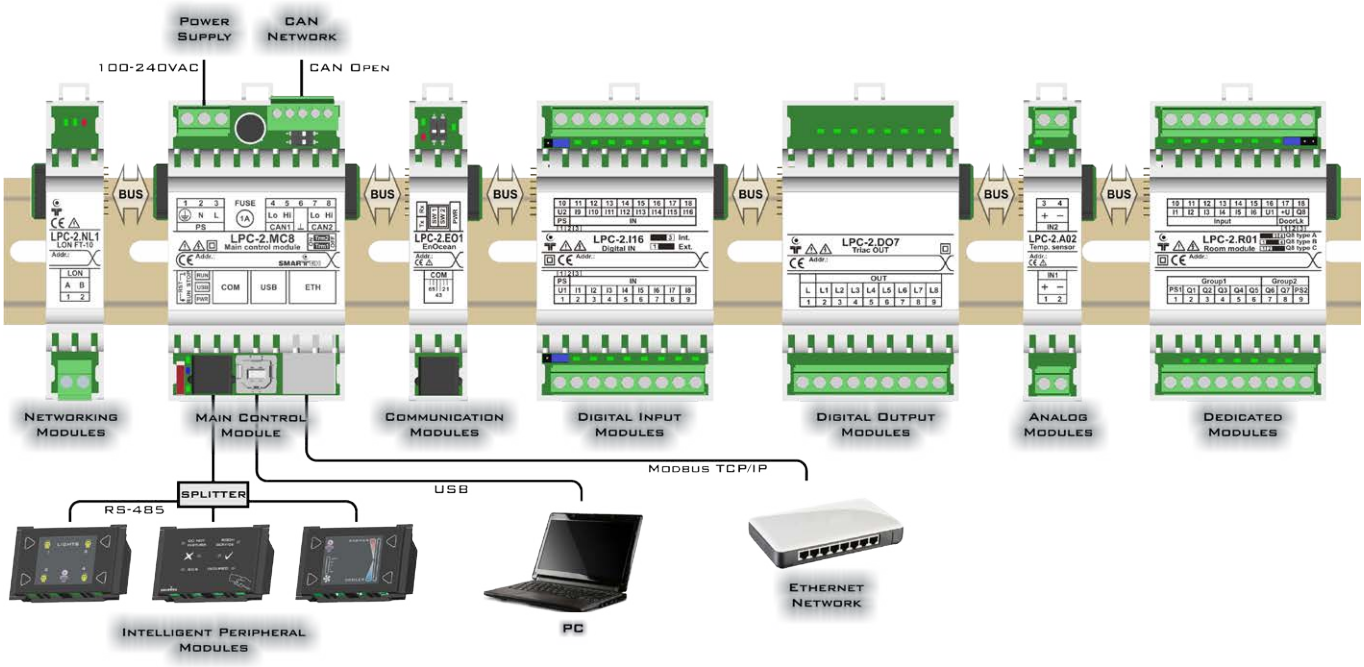
LPC-2 Programmable Controllers

Longo Programmable Controller LPC-2 is open programmable logic controller for use in automation, supervision and control solutions. Controller supports many possibilities in programming, including all five IEC-61131-3 programming languages (FBD, LD, SFC, ST, IL) and is easy to use. Modular LPC-2 controller architecture offers many different configuration options and communication possibilities.

2.1. CONTROLLER CONFIGURATION BASICS

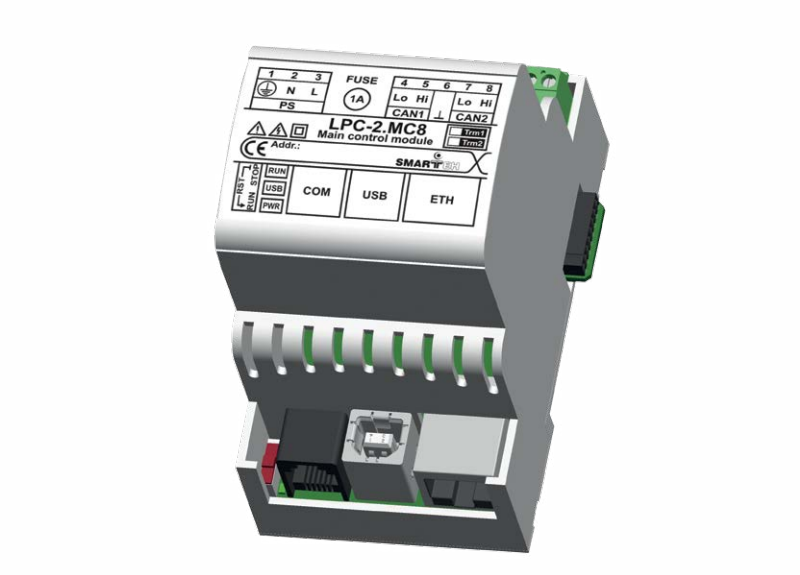
Main control module is the heart of LPC-2 system. Its purpose is to execute application software and to exchange data with I/O and communication modules.

The controller module is powered directly from the main power supply (115/230 VAC) and provides the power supply to the attached modules over internal bus.



2.2. MAIN CONTROL MODULES – MCU

MAIN CONTROL MODULES



TECHNICAL DATA		LPC-2.MC8	LPC-2.MC9
Power supply		100 .. 250 VAC	
Power consumption for CPU and BUS supply		25 W max	
Nr. of I/O & communication modules supported		up to 7	
LON networking modules supported		up to 2	
Number of intelligent peripheral modules supported (RFID, IR, LCD, VOC,wireless)		up to 16	
Real time clock		integrated	
Data storage - 2 Gb		none	micro SD card
Communication ports	Integrated ports	Smarteh RS-485 Modbus TCP/IP Slave 2 x CANopen	Smarteh RS-485 Modbus TCP/IP Slave Modbus RTU Master/Slave 2 x CANopen
	Optional modules	LON FT-10* EnOcean* GSM SMS protocol IR (intelligent module) DALI/DSI master	
Programming port		USB	USB, Ethernet
Programming SW		LPC Composer	
Programming standard		IEC 61131-3 (FBD, LD, SFC, ST, IL)	
Dimensions L x W x H		90 x 53 x 77 mm	

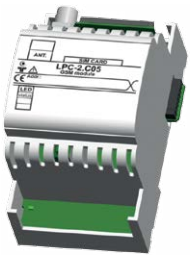
** Networking modules are used to extend networking capability of controller units*

2.3. NETWORKING MODULES

	LON

TECHNICAL DATA	LPC-2.NL2
Power supply	from internal BUS
Power consumption (BUS)	0.5 W
Dimensions L x W x H	90 x 18 x 60 mm
Communication port	LonWorks
Communication protocol	LonTalk
Connection	screw type
Compliant to	LON TP/FT-10, 78kbps
User defined	LON interface file *.xif
Configuration SW	LonMaker

2.4. COMMUNICATION MODULES

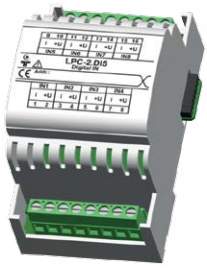
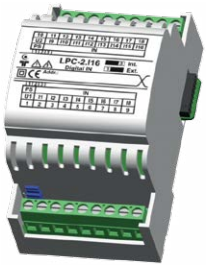
IR	GSM	DALI/DSI	ENOCEAN
For the IR (infra-red) and WA1 (wireless) communication modules see section 2.8.6 – Intelligent Modules			

TECHNICAL DATA	LPC-2.C05	LPC-2.DL1	LPC-2.EO1
Power supply	from internal BUS		
Power consumption (BUS)	1W	2W	0.5 W
Functional description	communication extension		
Connection	wireless	screw type	wireless
Communication protocol	GSM SMS messaging	DALI or DSI	EnOcean
Functionality	master/slave	master & power supply	transceiver
Compliant to	GSM900 & GSM1800	DALI & DSI	868.3 MHz EnOcean radio
Limitations	up to 160 GSM nrs. (users)	up to 64 slave devices	up to 5 input & output devices
Configuration SW	GSM Manager	-	WinEtel, LPC Tester
Dimensions L x W x H	90 x 53 x 60 mm	90 x 18 x 60 mm	

2.5. DIGITAL INPUT MODULES

2.5.1. Voltage free digital inputs

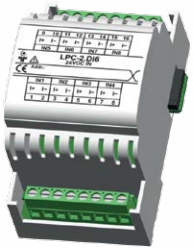
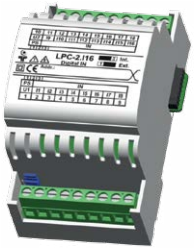
DIGITAL INPUTS FOR DIRECT CONNECTION OF VOLTAGE FREE (DRY) CONTACTS

TECHNICAL DATA	LPC-2.DI1	LPC-2.DI5	LPC-2.I16
Number of inputs	1	8	16
Voltage	24 VDC		24 VDC (35 VDC max)
Voltage source	Internal BUS		jumper selectable in 2 groups of 8 inputs: internal BUS or external
Input threshold	on: < 5 kΩ, off: > 40 kΩ		
Power consumption (BUS)	0.5 W	1.5 W	2.5 W
Dimensions L x W x H	90 x 18 x 60 mm	90 x 53 x 60 mm	

2.5.2. 24 VDC digital inputs

24 V DC DIGITAL INPUTS

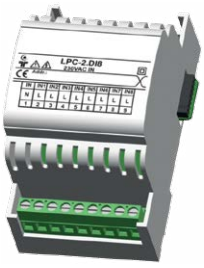



TECHNICAL DATA	LPC-2.DI3	LPC-2.DI6	LPC-2.I16
Number of inputs	1	8	16
Voltage (max)	24 VDC (35 VDC max)		
Voltage source	external		jumper selectable in 2 groups of 8 inputs: internal BUS or external
Input resistance	2.7 kΩ	3.6 kΩ	4.7 kΩ
Input threshold (On,Off)	U > 15 V, U < 2 V0.25 W		
Power consumption (BUS)	0.25 W		0.25 W
Dimensions L x W x H	90 x 18 x 60 mm	90 x 53 x 60 mm	

2.5.3. 24 VAC digital inputs

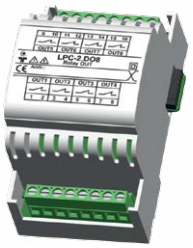
	24 V AC DIGITAL INPUTS	
TECHNICAL DATA	**LPC-2.DI4**	**LPC-2.DI7**
Number of inputs	1	8
Voltage (max)	24 (32) VAC	
Voltage source	external	
Input resistance	2.7 kΩ	3.6 kΩ
Input threshold (On,Off)	U > 15 V, U < 2 V	
Power consumption (BUS)	0.25 W	
Dimensions L x W x H	90 x 18 x 60 mm	90 x 53 x 60 mm

2.5.4. 230 VAC digital inputs

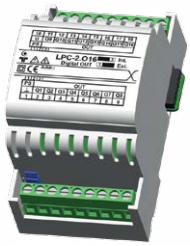
	230 V AC DIGITAL INPUTS	
		
TECHNICAL DATA	**LPC-2.DI2**	**LPC-2.DI8**
Number of inputs	1	8
Voltage (max)	230 (260) VAC	
Voltage source	external	
Input resistance	72 kΩ	200 kΩ
Input threshold (On,Off)	U > 150 VAC, U < 20 VAC	U > 60VAC, U < 22 VAC
Power consumption (BUS)	0.25 W	
Dimensions L x W x H	90 x 18 x 60 mm	90 x 53 x 60 mm

2.6. DIGITAL OUTPUT MODULES

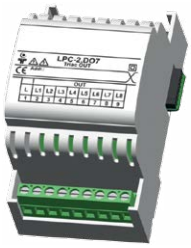
2.6.1. Relay digital outputs

RELAY DIGITAL OUTPUTS				
				
TECHNICAL DATA	LPC-2.DO2	LPC-2.DO3	LPC-2.DO6	LPC-2.DO8
Number of outputs	1	1	8	8
Output type	relay, NO	relay, NC	relay, NO	relay, NC
Voltage (max)	230 VAC			
Switching power (resistive load per output channel)	230 VAC/3 A, 30 VDC/3 A, 48 VDC/1 A For inductive loads use of suppression circuits is recommended.			
Power consumption (BUS)	0.5 W		2.75 W	
Dimensions L x W x H	90 x 18 x 60 mm		90 x 53 x 60 mm	

2.5.2. 24 VDC digital inputs

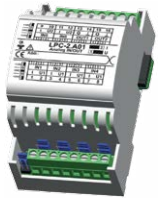
24 VDC DIGITAL OUTPUTS			
			
TECHNICAL DATA	LPC-2.DO1	LPC-2.O16	
Number of outputs	1	16	
Output supply	BUS powered	BUS powered	ext. power supply
Output type	transistor output	transistor output	
Voltage (max)	24 VDC ±35 %	24 VDC	20 .. 28 VDC
Switching power on output	100 mA, short circuit proof, output powered from BUS only	100 mA per module	500 mA per channel, 4 A per module
Max. load capacitance/channel	-	10 µF	
Power consumption (BUS)	0.75 W	3 W	1 W
Dimensions L x W x H	90 x 18 x 60 mm	90 x 53 x 60 mm	

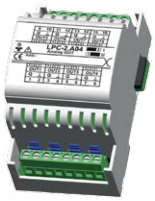
2.6.3. Triac 24 .. 230 VAC digital outputs

24 .. 230 V AC DIGITAL OUTPUTS			
			
TECHNICAL DATA	**LPC-2.DO4**	**LPC-2.DO9**	**LPC-2.DO7**
Number of outputs	1	4	8
Output type	zero crossing triac		
Voltage (max)	24 .. 230 V AC (external power supply)		
Switching power on output channel	0.05 .. 1.8 A per channel		0.05 .. 0.9 A per channel, 1000 W per module
Switching frequency	1 Hz		
Power consumption (BUS)	0.25 W	0.75 W	1 W
Dimensions L x W x H	90 x 18 x 60 mm	90 x 53 x 60 mm	

2.7. ANALOG MODULES

2.7.1. Analog inputs & outputs

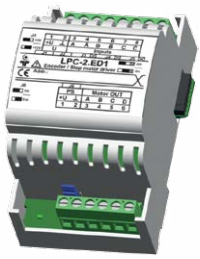
	TEMPERATURE ANALOG INPUT	0..10 V & 4..20 MA MIXED IN/OUT	
			
TECHNICAL DATA	**LPC-2.A02**	**LPC-2.A01**	
Number of inputs	2	6	
Number of outputs	-	2	
Input output type individually jumper selectable	-	voltage	current
Type of inputs	thermocouples E,J,K,N,R,S,T, NTC 10k, Pt100, Pt1000 and Ni1000	0..10 V	0..20 mA
Input connection	passive	passive / active, jumper selectable reference: GND, 24 VDC or 10 VDC	
Input resistance	-	10.7 kΩ	182 Ω
Input resolution	0.1 °C	3900 levels of full scale	
Measuring error of full scale	< ±1 %	< ±0.5 %	< ±0.1 %
Type of outputs	-	0..10 V	0..20 mA
Output resolution of full scale	-	450 levels	
Output accuracy	-	< ±0.1 %	< ±0.3 %
Power supply	from internal BUS		
Power consumption (BUS)	2 W	5 W max	
Dimensions L x W x H	90 x 18 x 60 mm	90 x 53 x 60 mm	

	ANALOG OUTPUT 0..20MA CURRENT AND/OR 0..10V VOLTAGE			
				
TECHNICAL DATA	**LPC-2.A03**		**LPC-2.A04**	
Number of outputs	2		8	
Output type individually selectable	voltage	current	voltage	current
Type of outputs	0..10V	0..20mA	0..10V	0..20mA
Output resolution of full scale	5000 levels			
Output accuracy of full scale	±2 %		±1 %	
Load resistance	R > 500 Ω	R < 500 Ω	R > 500 Ω	R < 500 Ω
Power supply	from internal BUS			
Power consumption (BUS)	1 W		5 W	
Dimensions L x W x H	90 x 18 x 60 mm		90 x53 x 60 mm	

2.8. DEDICATED MODULES

2.8.1. Stepper motor and encoder

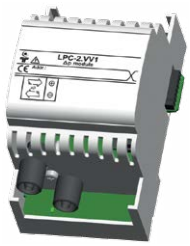
STEPPER MOTOR OUTPUT MODULE WITH ENCODER INPUT



TECHNICAL DATA	LPC-2.ED1
Number of outputs/inputs	4 (1 step motor) / 6 (1 encoder)
Output type (motor)	bipolar stepper motor drive (A,B,C,D)
Output power supply	internal (BUS) +24V or external 5..36 VDC, jumper selectable
Output rated load	up to 500mA per channel with external power supply
Input type (encoder)	TTL with 4k7 Ohm pull up to +5VDC or RS485 with 120 Ohm termination, jumper selectable (A, $\bar{A}$, B, $\bar{B}$, Z, $\bar{Z}$)
Input frequency	up to 10 kHz
Input power supply	internal (BUS), selectable +5 VDC or +12 VDC
Power consumption (BUS)	1 W no load connected
Dimensions L x W x H	90 x 53 x 60 mm

2.8.2. Differential pressure module

DIFFERENTIAL PRESSURE MODULE FOR AIR PRESSURE OR FLOW (VAV) MEASUREMENT



TECHNICAL DATA	LPC-2.VV1	LPC-2.VV2
Number of differential pressure	1	
Pressure measurement range differential, non-polluted atmosphere	0 .. 1000 Pa	0 .. 5000 Pa
Pressure measurement error	<0.5 % of full scale	
Pressure measurement pipes	internal diameter 4.0 .. 4.5 mm rubber, plastic, silicone, ...	
Pressure measurement resolution	1000 levels per full scale	5000 levels per full scale
Power consumption (BUS)	0.5 W	
Dimensions L x W x H	90 x 53 x 60 mm	

2.8.3. DC special digital output

	ADJUSTABLE VOLTAGE OUTPUT	DOOR LOCK OUTPUT

TECHNICAL DATA	LPC-2.SO2	LPC-2.DOL
Number of outputs	1	1
Output type	adjustable voltage	high voltage start pulse, then hold
Output power supply	from internal BUS	from internal BUS
Voltage (max)	5 .. 12 VDC adjustable in 1V step using DIP switch	pulse: 30 to 50 VDC, hold: 5.5V to 6.5 VDC
Output load	0.7A, 9W	coil resistance ≥ 20 Ω, please check selected door lock for compatibility
Switching frequency	T >5 s	T >5 s
Power consumption (BUS)	9 W	2 W
Dimensions L x W x H	90 x 18 x 60 mm	

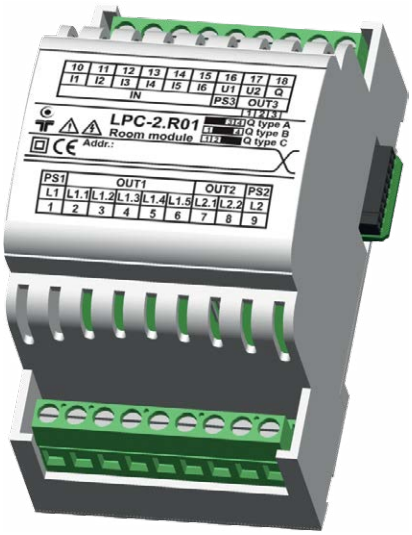
2.8.4. Dimmer output

	DIMMER OUTPUT

TECHNICAL DATA	LPC-2.DD2
Number of outputs	1
Output type	triac current 250 VAC for incandescent light dimming or fan drive
Output power supply	external
Rated load voltage	230 VAC ±10 %, 50/60 Hz
Rated load current	up to 1,5 A
Power consumption (BUS)	0.25 W
Dimensions L x W x H	90 x 18 x 60 mm

2.8.5. Room module

ROOM CONTROL DIGITAL INPUT AND OUTPUT MODULE WITH DOOR LOCK OUTPUT



TECHNICAL DATA	LPC-2.R01
Number of inputs	6
Number of outputs	7+ 1
Type of inputs	6 voltage free (dry) contact inputs
Inputs voltage	24 VDC internally supplied
Inputs threshold voltage	ON: <5 kΩ, OFF: >40 kΩ
Type of outputs	7 triac AC make contact in two groups (5+2) / 1 door lock DC output
Triac output voltage	24 .. 230 V AC
Output current per triac channel	0.9 A
Max. sum triac output load	1000 W
Door lock output voltage	pulse: 20/35/50V DC hold: 6.5-7.5V DC
Door lock output max. load	20 Ω
Power supply	from internal BUS for inputs & door lock output, external power supply for triac output
Power consumption (BUS)	4W
Dimensions L x W x H	90 x 53 x 60 mm

2.9. INTELLIGENT PERIPHERAL MODULES

2.9.1. Temperature control panel - LED

	TEMPERATURE CONTROL		TEMPERATURE & FAN CONTROL	

TECHNICAL DATA	LPC-2.P02	LPC-2.P02V	LPC-2.P01	LPC-2.P01V
Basic functionality	control panel and regulator for room heating and/or cooling			
Room temperature sensor	built in, accuracy ±1°C			
Room temperature display	none			
Light intensity sensor	used for automatic LED intensity adjustment, can also be used in application SW			
Temperature set	2 push buttons (WARMER, COOLER)			
Temp. set point display	18 green LED	10 green LED	12 green LED	10 green LED
Fan speed selection	none	none	1 push button	1 push button
Fan set point display	none	none	4 green LED	4 blue LED
Fan support	none	none	3 speed or step less fan	
2 and 4 pipe system	yes			
Frost protection	< 5 °C			
Door/window open switch	supported			
Economy operating mode	supported			
Housing color	white	black or white + customer selectable frame*	white	black or white + customer selectable frame*
Mounting	wall mount	flush mount*	wall mount	flush mount*
Communication connector	Dubox	RJ-12	Dubox	RJ-12
Accessories	splitters and interconnection cables needed			
Power supply	over communication cable			
Power consumption	1 W	0.5 W	1 W	0.5 W
Dimensions L x W x H	110 x 80 x 17 mm	65 x 47 x 25 mm	110 x 80 x 17 mm	65 x 47 x 25 mm

**Frame is not included. Smarteh has verified following lines of modular frames to be compatible with LPC-2.P0xx module:*

- *Bticino – Living, Light*
- *Gewiss – Playbus, System*
- *Vimar – Plana, Idea*
- *Tem – Pure, Line, Soft*
- *Master*
- *Ave*

2.9.2. Temperature control panel – LCD

	LCD TEMPERATURE CONTROL	LCD TEMPERATURE & FAN CONTROL

TECHNICAL DATA	AVAILABLE VERSIONS	
Touch buttons + Temp. sensor	LPC-2.DP2	LPC-2.DP1
Push buttons + Temp. sensor	LPC-2.DP2B	LPC-2.DP1B
Touch btn + Temp. + RH sensor	LPC-2.DP2H	LPC-2.DP1H
Push btn + Temp. + RH sensor	LPC-2.DP2BH	LPC-2.DP1BH
Basic functionality	LCD control panel and regulator for room heating and/or cooling	
Measuring accuracy	temp. range 0..50°C: accuracy ±1°C, RH range 0 .. 95 %RH, accuracy < 5 % of full scale	
Room temperature display	numeric, on LCD, resolution 0.5 °C	
Light intensity sensor	used for automatic LCD intensity adjustment, can also be used in application SW	
Temperature set	2 + 2 touch buttons	2 buttons**
Temp. set point display	numeric and graphic, on LCD***	
Fan speed selection	none	2 buttons
Fan set point display	none	graphic, on LCD
Fan support	none	3 speed or step less fan
2 and 4 pipe system support	yes	
Frost protection	< 5 °C	
Door/window open switch	supported	
Economy operating mode	supported	
Front plate color	black + customer selectable front plate****	
Mounting	flush mount*	
Communication connector	RJ-12 (splitters and interconnection cables needed)	
Power supply	over communication cable	
Power consumption	1W	
Dimensions L x W x H	65 x 49 x 29 mm	

Note: Background picture can be changed using Smarteh LCD Composer software and LSA-2.USB adapter. For 2" LCD Display Unit LPC-2.DU1 color text display with 4 touch buttons see chapter 2.10.1.

**Frame is not included. Smarteh has verified following lines of modular frames to be compatible with LPC-2.DPx module:*

- *Bticino – Living, Light*
- *Gewiss – Playbus, System*
- *Vimar – Plana, Idea*
- *Tem – Pure, Line, Soft*
- *Master*
- *Ave*

***To change settings on LCD panel with touch buttons press any button for approximately one second, to switch LCD to SET mode.*

****Temperature set point is temporary displayed while LCD display is in SET mode.*

****Numeric value of temperature can be displayed or hidden – user programmable.*

*****Color of the front can be done in different colors*

2.9.3. Wireless LCD control panel (T/RH/LUX)

	LCD TEMPERATURE CONTROL	LCD TEMPERATURE & FAN CONTROL	LCD MULTIPURPOSE CONTROL SWITCH

TECHNICAL DATA	LPC-2.WP2H	LPC-2.WP1H	LPC-2.WT1
Basic functionality	LCD temperature control panel with RH measurement for heating and/or cooling		LCD color display with 4 control buttons, picture on LCD can be adapted to the customer needs, and also functionality of the buttons
Measuring range	built in, temp: 0 .. 50°C, RH: 0 .. 100%		N/A
Measuring accuracy	temp. range 0..50°C: acc. ±1°C, RH range 0 .. 95 %RH, acc.<5 % of full scale		N/A
Room temperature display	numeric, on LCD, temp. res. 0.5 °C, RH resolution 1%		N/A
Light intensity sensor	used for automatic LCD intensity adjustment, can also be used in application SW		
Temperature set	2 + 2 push buttons	2 push buttons	4 push buttons*
Temp. set point display	numeric and graphic, on LCD**		
Fan speed selection	none	2 push buttons	none
Fan set point display	none	graphic, on LCD	none
Fan support	none	3 speed or step less fan	none
2 and 4 pipe system	yes		none
Frost protection	< 5 °C		none
Door/window open mode	supported		none
Economy operating mode	supported		none
Housing color	white		
Mounting	wall mount		
Communication protocol	wireless M-BUS (868MHz) LPC-2.WA1adapter is necessary, see section 2.9.8		
Power supply	2 pcs. AA battery type (not included)***		
Battery indicator	Yes		
Dimensions L x W x H	115 x 72 x 18 mm		

**Buttons can be used for different purpose (on/off switch)*

***Temperature set point is temporary displayed, while LCD display is in SET mode.*

***Numeric value of temperature can be displayed or hidden – user programmable.*

****Expected battery life > 1 year, depending on battery capacity*

2.9.4. RFID access control and holder (wall mount)

	ACCESS CONTROL RFID CARD READER		ACTIVE RFID CARD HOLDER

TECHNICAL DATA	LPC-2.ID3	LPC-2.ID1	LPC-2.ID2
Basic functionality	used for identification, door unlocking etc.	for a hotel room door unlocking and room status signalization	RFID card holder, presence identification and room status setting
RFID reader type	EM4100 - EM Marin (Manchester 64 read only) 125kHz		
Signalization LEDs	OK (access granted) FAULT (access denied)	OK (access granted) FAULT (access denied) OCCUPIED DO NOT DISTURB ROOM SERVICE SOS	DO NOT DISTURB ROOM SERVICE
Acoustic signalization	short beep:OK long beep: FAULT	short beep: OK long beep: FAULT	-
Push buttons	-	-	DO NOT DISTURB ROOM SERVICE
Digital input	safety switch on back of the reader	safety switch on back of the reader	mechanical switch for card presence
Relay output	NO, 30 VDC, 2A		
Housing color	white		
Mounting	wall mount		
Communication connector	Berg M (splitters and interconnection cables needed)		
Power supply	over communication cable		
Power consumption	0.5 W		
Dimensions L x W x H	110 x 80 x 17 mm		

2.9.5. RFID access control for flush mount

	ACCESS CONTROL RFID CARD READER		ACTIVE RFID CARD HOLDER

TECHNICAL DATA	LPC-2.CR1	LPC-2.CA1	LPC-2.CH1
Basic functionality	used for identification, door unlocking	for a hotel room door unlocking and room status signalization	RFID card holder, presence identification and room status setting
RFID reader type	AVAILABLE VERSIONS:		
LPC-2.CR1	EM4100 - EM Marin (Manchester 64 read only) / HITAG2 (UID read only) 125kHz		
LPC-2.CR1M	MIFARE Classic 1K comply to ISO/IEC 14443-4 Type A (13,56MHz)		
LPC-2.CA1	EM4100 - EM Marin (Manchester 64 read only) / HITAG2 (UID read only) 125kHz		
LPC-2.CA1M	MIFARE Classic 1K comply to ISO/IEC 14443-4 Type A (13,56MHz)		
LPC-2.CH1	EM4100 - EM Marin (Manchester 64 read only) / HITAG2 (UID read only) 125kHz		
LPC-2.CH1M	MIFARE Classic 1K comply to ISO/IEC 14443-4 Type A (13,56MHz)		
Signalization LEDs	OK (access granted) FAULT (access denied)	DO NOT DISTURB ROOM SERVICE OK (access granted) FAULT (access denied) SOS OCCUPIED	DO NOT DISTURB ROOM SERVICE
Acoustic signalization	short beep: OK long beep: FAULT	short beep: OK long beep: FAULT	-
Touch buttons	-	-	DO NOT DIS. ROOM SERVICE
Housing color	black + user selectable frame*		
Mounting	flush mount*		
Communication connector	RJ-12 (splitters and interconnection cables needed)		
Power supply	over communication cable		
Power consumption	0.5 W		
Dimensions L x W x H	65 x 49 x 29 mm		

**Frame is not included. Smarteh has verified following lines of modular frames to be compatible with LPC-2.CxxM module:*

- *Gewiss – Playbus, System*
- *Vimar – Plana, Idea*
- *Tem – Pure, Line, Soft*
- *Master*
- *Ave*

2.9.6. RFID access control (outdoor installation)

ACCESS CONTROL RFID CARD READER FOR OUTDOOR USE

TECHNICAL DATA	LPC-2.CR2	LPC-2.CR2M
Basic functionality	used for identification, door unlocking, etc.	
RFID reader type	EM4100 - EM Marin (Manchester 64 read only) HITAG2 (UID read only) 125kHz	Mifare 13,56MHz
Signalization LEDs	OK (access granted), FAULT (access denied)	
Acoustic signalization	short beep: OK, long beep: FAULT	
Housing color	black panel on white housing	
Mounting	outdoor use, IP 65	
Communication connector	RJ-12	
Power supply	over communication cable	
Power consumption	0.5 W	
Dimensions L x W x H	120 x 80 x 60 mm	

2.9.7. Temperature, humidity and air quality sensors

TEMPERATURE, RELATIVE HUMIDITY (RH) AND AIR QUALITY (VOC) SENSOR

TECHNICAL DATA	LPC-2.TH1	LPC-2.AQ1
Basic functionality	temperature and RH measurements	VOC measurement
Temp. measurement range	-40,00 .. 123,80 °C	CO2 equivalents: 450-2000 ppm
Measuring accuracy	temperature range 0 .. 50 °C: accuracy ±1°C RH range 0 ..95 %RH, accuracy < 5 % of full scale	air quality measurement range 0 .. 2000ppm
VOC Detection – substances (LPC-2.AQ1)	Acetone, Ethanol, Isoprene, CO2, Nonanal, Decanal, Methane, Hydrogen, Limonene, Alcohols, Esters, CO, Unburnt hydrocarbons, Benzene, Phenols, Humidity, Formaldehyde, Ketone, Styrene...	
Housing color	black or white	
Mounting	flush mount	
Communication connector	RJ 12 (RS485)	
Power supply	over communication cable	
Power consumption	0.5 W	
Dimensions L x W x H	65 x 47 x 25 mm (3M)	24 x 48 x 34 mm (1M)

2.9.8. Infrared transceiver and wireless adapter

	INFRA-RED TRANSCEIVER	WIRELESS ADAPTER

TECHNICAL DATA	LPC-2.IR1V INFRARED TRANSCEIVER	LPC-2.WA1
Basic functionality	programmable IR transceiver for universal IR remote control unit	adapter for Wireless LCD control panels
IR communication protocol	Sanyo 7461 carrier: 38 kHz, coding: Pulse-position modulation	wireless M-BUS (868MHz)
Housing color	black or white	black
Mounting	flush mount*	none
Communication connector	RJ-12 (splitters and interconnection cables needed)	
Power supply	over communication cable	
Power consumption	0.5 W	
Dimensions L x W x H	24 x 48 x 34 mm	80 x 64 x 26 mm
Configuration SW	LPC tester	

2.9.9. Custom design control panel - LCD

	CUSTOM DESIGN CONTROL PANELS	

TECHNICAL DATA	LPC-2.DXX	LPC-2.DT1
Basic functionality	LCD color display with 4 control buttons, picture on LCD can be adapted to the customer needs, and also functionality of the buttons	
2+2 touch buttons	LPC-2.DXX	LPC-2.DT1
2+2 push buttons	LPC-2.DXXB	LPC-2.DT1B
Housing color	black + user selectable frame*	
Mounting	flush mount*	
Communication connector	RJ-12 (splitters and interconnection cables needed)	
Power supply	over communication cable	
Power consumption	1 W	
Dimensions L x W x H	65 x 49 x 29 mm	

**Frame is not included. Smarteh has verified following lines of modular frames to be compatible with LPC-2.DPx module:*

- *Tem – Pure, Line, Soft*
- *Gewiss – Playbus, System*
- *Master*
- *Vimar – Plana, Idea*
- *Ave*
- *Bticino – Living, Light*

2.10. OPERATOR TERMINALS

2.10.1. Text display operation terminal - LCD

		DISPLAY UNIT 2”

TECHNICAL DATA		LPC-2.DU1
Power supply / consumption		Power supplied from MCU
		1W
Material	Front plate	Black glossy, scratch resistant
	Back	Plastic black
Dimensions L x W x H		65 x 49 x 29 mm
FUNCTIONAL DESCRIPTION		Text display with 4 touch buttons
Screen	Type	graphic color 2” LCD with automatic back light intensity control
	Colors	custom selection of text line colors and background picture
	Display definition	220 x 176 pixels
	Text definition	4 lines of 17 characters
	Size	39 x 32 mm
Keyboard type		4 keys: Up, Down, Edit, OK
Signalization		Set mode, Edit mode, Err mode, Pointer, Cursor
Built in sensors	Temperature	0 .. 4000 (1/100°C)
	Light intensity	0 .. 100
Mounting		flush mount, customer selectable frame*
Supported protocols		Smarteh proprietary
Connection	Communication	RJ-12
	Customization downl.	RJ-12
Customization SW		LCD Composer
Programming SW		LPC Composer (programming is carried out on the MCU). FBD block available

**Frame and cover plate are not included. Smarteh has verified following lines of modular frames to be compatible with LPC-2.DU1 module:*

- *Bticino – Living, Light*
- *Gewiss – Playbus, System*
- *Vimar – Plana, Idea*
- *Tem – Pure, Line, Soft*
- *Master*
- *Ave*

2.10.2. Modbus RTU temperature control panel - LCD

	LCD TEMPERATURE CONTROL	LCD TEMPERATURE & FAN CONTROL

TECHNICAL DATA	LMP-1.MP2	LMP-1.MP1
Basic functionality	LCD temperature control panel for heating and/or cooling.	
Room temperature sensor	built in, accuracy ±1°C	
Room temperature display	numeric, on LCD, resolution 0.5 °C	
Light intensity sensor	used for automatic LCD intensity adjustment, can also be used in application SW	
Temperature set	2 + 2 touch buttons	2 touch buttons**
Temp. set point display	numeric and graphic, on LCD***	
Fan speed selection	none	2 buttons
Fan set point display	none	graphic, on LCD
Fan support	none	3 speed or step less fan
2 and 4 pipe system support	yes	
Frost protection	< 5 °C	
Door/window open mode	supported	
Economy operating mode	supported	
Housing color	black + customer selectable front plate****	
Mounting	flush mount*	
Communication connector	RJ-12	
Supported protocols	Modbus RTU (RS485)	
Power supply	7..30 VDC	
Power consumption	1W	
Dimensions L x W x H	65 x 49 x 29 mm	

Note: Background picture can be changed using Smarteh LCD Composer software and LSA-2.USB adapter.

** Frame is not included. Smarteh has verified following lines of modular frames to be compatible with LPC-2.MPx module:*

- *Bticino – Living, Light*
- *Gewiss – Playbus, System*
- *Vimar – Plana, Idea*
- *Tem – Pure, Line, Soft • Master*
- *Ave*

***To change settings on LCD panel with touch buttons press any button for approximately one second, to switch LCD to SET mode.*

****Temperature set point is temporary displayed while LCD display is in SET mode.*

****Numeric value of temperature can be displayed or hidden – user programmable.*

2.10.3. Touch screen control panel - LCD

		7” LCD TOUCH SCREEN

TECHNICAL DATA		LTS-1.PC2
Power supply	Voltage	5 V (optional LPS-2 power supply available)
Power consumption	Current	1.2 A
Material	Front plate	Aluminum, painted in Gray (RAL 9006) or Mate Black (RAL 9004)
Dimensions L x W x H		210 x 160 x 45 mm
DETAILED DESCRIPTION		
Screen	Type	7” TFT, 16:9, resistive touch screen
	Colors	64 k
	Resolution	800 x 480 pixels
	Size	154 x 92 mm
Keyboard type		USB keyboard & mouse supported
Signalization		buzzer, 4 LEDs on back
Operating system (supported)		Windows CE 5.0 (Linux 2.6.13, WinCE.NET 6.0, Android)
Processor	Samsung S3C2440A	400MHz
Memory		64M SDRAM on board, clock up to 100 MHz
		256M/1G Nand Flash on board, nonvolatile
		2M Nor Flash on board, nonvolatile
		SD card interface (SD 2GB included)
Real time clock		on board, battery backup
On board connectors	Communication	10/100M Ethernet (RJ-45 interface) 1x RS-232 (RJ12 interface, opto isolated) 1x RS-485 or RS-232 (RJ12 interface, opto isolated)
	Multimedia support	audio input interface stereo audio output interface CMOS camera interface USB camera supported
	OS & app. download.	USB, RS-232
Programming SW		Movicon CE (demo preinstalled) – licence optional

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LIVING SYSTEMS

LRC-2

Room Temperature Controllers

LRC-2 Room Temperature Controllers

LRC stands for Longo Room Control and it is intended to be used for room temperature control.

3.1. INTRODUCTION TO LRC-2

LRC-2 products are well-suited for a low cost solutions where simple regulation of heating and cooling is required.

LRC-2 control systems can be adopted in a number of different ways to control fan coils, convectors (FS type), chilled beams or radiators (CS type).

Control system is composed of Input/Output unit (I/O), Control Panel (CP) and interconnection cable. LRC-2 system can be used in standalone or network configuration. For networking, use of LRC-1.NE1 or LRC-1. NL1 network adapter is required.

The module is powered directly from the 230 VAC mains power supply.

Control panel has integrated functions and settings, which allow adaptation to the selected heating/cooling device.

Settings can be performed by using PC.

Control panels can be made in different outfits and colors.

3.1.1. Fan coil controller selection table

	LED WALL MOUNT	LED FLUSH MOUNT	LCD FLUSH MOUNT

FAN COIL CONTROLLER	LRC-2.FS1	LRC-2.FS1V	LRC-2.FS1-D
Control panel mounting	wall mount	flush mount	
Color	white	white/black	black
Room temperature	measured		measured & displayed
Room temp. set point	2 push buttons		2 touch sensors
3 speed and auto fan set	1 push button		2 touch sensors
Temp. set point display	LED bar graph		numerical and graphical
Selected fan speed display	LED bar graph		graphical
2 and 4 pipe system support	✓		
Frost protection function	✓		
Economy function - saving	✓		
Light intensity sensor	✓		
LED/LCD light intens. control	automatic dimming in dark environment (low intensity at night)		
Interconn. without network	select cable SIC4-7	select cable ICM-7	
Interconn. with networking	select cable SIC6-7	select cable SND6-7	
Dimensions L x W x H	110 x 80 x 17 mm	65 x 49 x 29 mm	

	FAN COIL CONTROLLER INPUT / OUTPUT UNIT

FAN COIL I/O	LRC-2.FS1 I/O
Basic functionality	temperature room control using fan coils or convectors
Power supply	230VAC ±10%, 50/60Hz
Power consumption with no load	3W
Dimensions L x W x H	90 x 53 x 77 mm
Balcony door/window input	✓
Condensation sensor input	✓
Cool/hot water valve output	230 VAC, 6A / 230 VAC, 6A*
3 speed fan motor output	230V, 500VA
Networking support	order networking module LRC-1.NE1 or LRC-1.NE2 or LRC-1.NL1 + splitter SPL1 + cable SND6-7

3.1.2. Chilled beam controller selection table

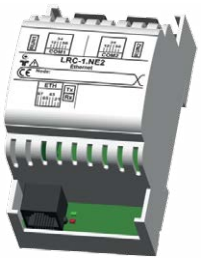
	LED WALL MOUNT	LED FLUSH MOUNT	LCD FLUSH MOUNT

CHILLED BEAM CONTROLLER	LRC-2.FS1	LRC-2.FS1V	LRC-2.FS1-D
Control panel mounting	wall mount	flush mount	
Color	white	white/black	black
Room temperature	measured		measured & displayed
Room temp. set point	2 push buttons		2 touch sensors
Temp. set point display	LED bar graph		numerical and graphical
2 and 4 pipe system support	✓		
Frost protection function	✓		
Economy function - saving	✓		
Light intensity sensor	✓		
LED/LCD light intens. control	automatic dimming in dark environment (low intensity at night)		
Interconn. without network	order cable SIC4-7	select cable ICM-7	
Interconn. with networking	order cable SIC6-7	order cable SND6-7	
Dimensions L x W x H	110 x 80 x 17 mm	65 x 49 x 29 mm	

	CHILLED BEAM CONTROLLER INPUT / OUTPUT UNIT

CHILLED BEAM I/O	LRC-2.CS1 I/O
Basic functionality	temperature room control using chilled beams or radiators
Power supply	230VAC ±10%, 50/60Hz
Power consumption with no load	3W
Dimensions L x W x H	90 x 53 x 77 mm
Balcony door/window input	✓
Condensation sensor input	✓
Cool/hot water valve output	230 VAC, 6A / 230 VAC, 6A*
Networking support	order networking module LRC-1.NE1 or LRC-1.NE2 or LRC-1.NL1 + splitter SPL1 + cable SND6-7

3.1.3. LRC networking modules

	ETHERNET	DUAL MODULE	LON
			

TECHNICAL DATA	LRC-1.NE1	LRC-1.NE2	LRC-1.NL2	LRC-1.NL1
Power supply	Internally supplied from LRC			
Power consumption (from	<3 W			
Dimensions L x W x H	90 x 18 x 60 mm	90 x 53 x 60 mm		90 x 18 x 60 mm
Communication port	Ethernet	Ethernet	LonWorks	LonWorks
Communication protocol	Modbus TCP slave	Modbus TCP	LonTalk	LonTalk
Connection	RJ45	2xRJ45	2 x screw type	screw type
Compliant to	Ethernet II and IEEE802.3 10Base5, 10Base2 10BaseT, 10Mbps		LON TP/FT-10, 78kbps	
Nr. of controllers supported	Single LRC controller	Two LRC controllers		Single LRC controller

3.1.4. Connection of LRC networking modules

	LRC COMMUNICATION MODULE CONNECTION CABLE

TECHNICAL DATA	SND6-7
Functionality	Used for connection of LRC-1.Nxx communication module to LRC-2 I/O unit.
Compatibility	LRC (LONGO room controller) networking
Communication connector	RJ12 to RJ12
Dimensions	7m (other length to be specified)

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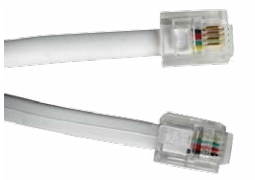
Accessories

Accessories

4.1. FOR CONNECTION OF INTELLIGENT PERIPHERAL MODULES

	RJ12 CONNECTION CABLE	DUBOX/RJ12 CONNECTION CABLE
		

TECHNICAL DATA	SSK	ICM-7	RIC6-7	SIC4-7	SIC6-7
Functionality	interconnection cable for flush mount			interconnection cable for wall mount	
Compatibility	LPC, LRC: no networking		LRC: with network	LPC, LRC: no networking	LRC: with network
Communication connector	RJ12 to RJ12			RJ12 to Dubox	
Dimensions	0,5 m	7 m (other length to be specified)			

	SPLITTER 1/2	SPLITTER 1/8	SPLITTER 1/4

TECHNICAL DATA	SPL-1	SPL-2	SPL-5
Functionality	used to connect up to 2 intelligent peripheral modules to MCU	used to connect up to 8 intelligent peripheral modules to MCU	used to connect up to 3 intelligent peripheral modules to MCU
Compatibility	LPC-2 & LRC-2		
Communication connector	RJ-12		
Dimensions L x W x H	37 x 30 x 27 mm	70 x 54 x 32 mm	70 x 54 x 32 mm

4.2. LON TERMINATORS

LON BUS/FREE TERMINATORS

TECHNICAL DATA	LBT-1	LBT-2	LBT-3	LFT-1	LFT-2	LFT-3
Basic functionality	LON terminators are used to provide electrical termination of twisted pair channels for FREE topology. For BUS topology two terminators are required.					
Compatibility	TP/FT-10					
Topology	BUS	BUS	BUS	FREE	FREE	FREE
Connection	RJ45	flying wire	RJ12	RJ45	flying wire	RJ12

4.3. ACCESS CONTROL EQUIPMENT

	RFID IDENTIFICATION CARD	ELECTRICAL DOOR LOCK

TECHNICAL DATA	CRD-1	ELK-X*
Basic functionality	RFID identification card EM4100 125 kHz, read only Hitag 2,	electromagnetic door lock
RFID Standard	Mifare (13,56MHz)	-
Compatibility	all RFID intelligent modules	LPC-2.DOL, LPC-2.R01
Options	custom printing available	suitable face plates available micro switch option available
Dimensions L x W x H	credit card size	79,8 x 20,5 x 29,5 mm

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Sensors

Sensors

5.1. TEMPERATURE SENSORS

	TEMPERATURE SENSOR		

TECHNICAL DATA	NTC-1	NTC-4	NTC-5
Basic functionality	temperature measuring		room temp. measurement
Measuring range	0 .. 50°C	-20 .. 100°C	
Rated resistance	10kΩ ±5%, EPCOS part B57891, 4901		
Compatibility with LPC-2	LPC-2.A02, LPC-2.A01		
Connection	0.7 m, halogen free, flame retardant cable	4 m, halogen free, flame retardant cable	RJ12
Housing	PA66 with 25% glass fibers	PA66 with 25% glass fibers, waterproof	flush mount
Dimensions	14.5 x 10 x 42 mm	Φ6 x 30 mm	24 x 48 x 34 mm

5.2. MAGNETIC SENSORS

	REED RELAY SWITCH	

TECHNICAL DATA	MGK-3	WIRELESS SOLAR POWERED SWITCH
Basic functionality	reed switch, detecting position, such as doors closed, windows closed etc.	
Connection cable	1 m halogen free, flame retardant cable	Wireless - Enocean
Dimensions	Φ6 x 30 mm	-

5.3. CONDENSATION AND WATER LEAKAGE DETECTORS

	CONDENSATION DETECTOR	WATER LEAKAGE DETECTOR

TECHNICAL DATA	LCS-1.C01	LCS-1.C02	LWD-2
Basic functionality	detection of condensation on the surface of cooling elements		flood or water leakage detection
Behavior	output active and conducting if condensation appears	output not active (not conducting) if condensation appears	output is active (conducting) in the absence of water
Sensitivity	adjustable (trimmer)		electrodes submersed into water
Ambient temperature	0 .. 50°C		
Supply voltage	10 .. 24V AC/DC 15 mA	10 .. 28V DC 50 mA	10 .. 28 VDC
Local signalization	Red LED: dew detected Green LED: power OK	Green LED: Power OK NO condensation	Green LED: OK no water
Compatibility	see user manual for connection diagrams		Green LED: OK no water
Connection wires	4 flying wires	2 flying wires	2 flying wires
Connection cable	on request up to 10 m		4m
Dimensions L x W x H	78 x 44 x 11 mm		60 x 40 x 15 mm

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Standalone Products

Standalone Products

6.1. GSM COMMANDER GM2

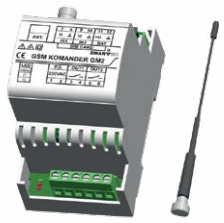
GSM COMMANDER GM2 is designed for the remote alarming and control, using SMS messages via GSM network. With GSM COMMANDER GM2 you can control two electrical devices and monitor the status of two sensors with a common mobile phone. Apart from the GM2 you need a valid SIM card of a network provider.

The typical purpose of GM2 is:

- sending commands for remote switching of one or two electric devices from common mobile phone using simple SMS messages,
- receiving automatically generated SMS alarms from one or two connected sensors to a mobile phone.

There are also two versions of GM2, which are application specific:

- GM2-V is used for remotely opening of garage or backyard door or barrier gate by initiating phone call to the GSM number of GM2.
- GM2-A is used for vehicle monitoring - burglary alarm.

	GSM COMMANDER			
				
TECHNICAL DATA	**GM2**	**GM2-V**	**GM2-A**	**GM4**
Version	general purpose remote control	door or barrier gate ring control	burglary alarm for vehicle monitoring	general purpose remote control
Version specific behavior	each output has specific commands for switching on&off	ring triggers 3s pulse output	input: burglary, output: disable vehicle	each output has specific commands for switching on&off
Basic functionality	remote control for 2 devices (outputs) and monitoring 2 inputs			
Power supply	230 VAC ±10 %, 50/60 Hz			24 VDC
Backup power supply	optional: Pb accu. 12V, app 1.3 Ah, accu. is recharged from the GM-2			none
Power consumption	1W to 8W			
Communication protocol	SMS commands and alarms (text messages) and 1x ring command (voice call)			
Security	access limited to list of registered users, based on phone numbers			
GSM	dual band 900/1800 MHz			
SIM compatibility	PIN checking must be disabled on the SIM card			
Antenna	included in delivery			
Antenna extension cable	to be ordered separately: AC1 (1m), AC4 (4m), AC10 (10m)			
Configuration	through cell phone and SMS commands or using GSM manager			
Dimensions L x W x H	90 (191 with antenna attached) x 53 x 89 mm			

6.1. GSM COMMANDER GM2

LMD-2 is step less motor drive for speed regulation, which adjusts the speed of the motor in a way that motor does not produce audible noise. Main usage of this unit is in HVAC (Heating, Ventilating, and Air Conditioning) applications, where variable fan speed with low noise is required.

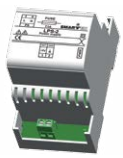
SILENT MOTOR DRIVE FOR FAN SPEED CONTROL

TECHNICAL DATA	LMD-2
Basic functionality	variable voltage output (PWM modulated with frequency of 20 kHz)
Power supply	230 V AC, -15% +10%, 50/60 Hz
Power consumption	250 VA (maximum load)
Rated load voltage	230 VAC, 50/60 Hz
Rated load current	1.3 A
Control mode setting	jumper selectable
Control modes	0..10 V, 0..20 mA, external 10k potentiometer, internal potentiometer
Connection type	screw type connectors
Ambient temperature	0 to 40 °C
Dimensions L x W x H	93 x 82 x 47 mm

6.3. POWER SUPPLY MODULES

The power supply modules can be used to supply voltage to Smarteh's operation terminals or I/O modules and also for powering third party devices like sensors, measuring converters etc.

POWER SUPPLY MODULE



TECHNICAL DATA	LPC-2.SO5	LPC-2.SO7	LPS-2
Basic functionality	dual DC power supply	AC & DC power supply	DC power supply
Power supply	230 VAC ±10 %, 50/60 Hz		
Power consumption	15 W		
Fuse	✓		
Rated OUT 1 voltage	24 VDC	24 VDC	5.2 VDC
Rated OUT 1 load	230 mA	230 mA	1 A
Rated OUT 2 voltage	12 VDC	24 VDC	-
Rated OUT 2 load	400 mA	230 mA	-
Connection type	screw type connectors		
Dimensions L x W x H	90 x 53 x 77 mm		

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LIVING SYSTEMS

SW & Tools

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7.1. USB TO SERIAL RS-232 / RS-485 ADAPTER

USB TO SERIAL RS-232 / RS-485 ADAPTER

TECHNICAL DATA		LSA-2.USB
Basic functionality		optically isolated serial converter from PC (USB) to RS232 or 485 device
Rated communication speed		up to 115 kbps
Power supply		from USB
Power consumption		0.25 W without power supply output (PS out) load
Connectors	Mini USB	USB connection to PC
	RS232-RJ12	Tx, Rx, GND, +PS out
	RS232-DB9M	Tx, Rx, GND
	RS485-RJ12	A, B, GND, +PS out
	RS485-DB9FM	A, B, GND
	RS485-screw	A, B, GND, +PS out
RS485 line termination		internal 120 Ω
Power supply output (PS out)		10 VDC / 75 mA, galvanic isolated
Dimensions L x W x H		80 x 64 x 26 mm
Configuration SW		Adapter is already supported with corresponding drivers on Linux systems (Ubuntu, Arch, Fedora, Suse), Vista and Windows 7. For other operating systems (Win98, Win 2000, Win ME and XP) drivers can be downloaded from www.smarteh.si

7.2. LON LINE TESTER

LON line tester LLT-1 is testing device for quick checking of LON TP/FT-10 78 kbps based network built with CAT5+ cabling. Testing can be performed on busy networks (traffic running) or on idle networks (no traffic).

LON NETWORK CABLE TESTER	

TECHNICAL DATA	LLT-1 MASTER LLT-1 SLAVE
Basic functionality	testing device for quick checking of network cables on LON FT-10 78 kbps based networks, primarily built with CAT5+ cabling
Power supply	2 x AA batteries or 5 VDC adapter
Power consumption	0.3 A
Supported diagnostics	line shorted, using LLT-1 MASTER
	signal level sufficient, using LLT-1 MASTER and LLT-1 SLAVE
	transmit/receive operation, using LLT-1 MASTER and LLT-1 SLAVE
Limitations of use	only one Master and Slave pair of LLT-1 tester can be used on single FT-10 channel at the same time
	testing through routers, repeaters and gateways is not possible.
	different type of channels (like XF-1250) are not supported.
Package	protective bag 2 x AA batteries (not included) AC power adapter
Dimensions L x W x H	154 x 95 x 40 mm

7.3. PROGRAMMING CABLES

PROGRAMMING CABLES

TECHNICAL DATA	PMC	PTC	PCC	PMU
Functionality	programming, parameterization & online monitoring	parameterization and online monitoring	parameterization and online monitoring	programming, parameterization & online debugging
HW compatibility	LPC-2.MC7 LPC-2.C05 LPC-2.MC3 LRC-2.xxx GM2		LRC	LPC-2.MC8
SW compatibility	LPC Composer (programming) LPC Tester (monitoring) GSM Manager (parameterization) LRC Many (monitoring)		LPC tester	LPC Composer
PC communication port	COM (RS-232)			USB
Communication connector	DB9 / RJ-12		DB9 / Dubox	USB A-B

7.4. PROGRAMMING SW

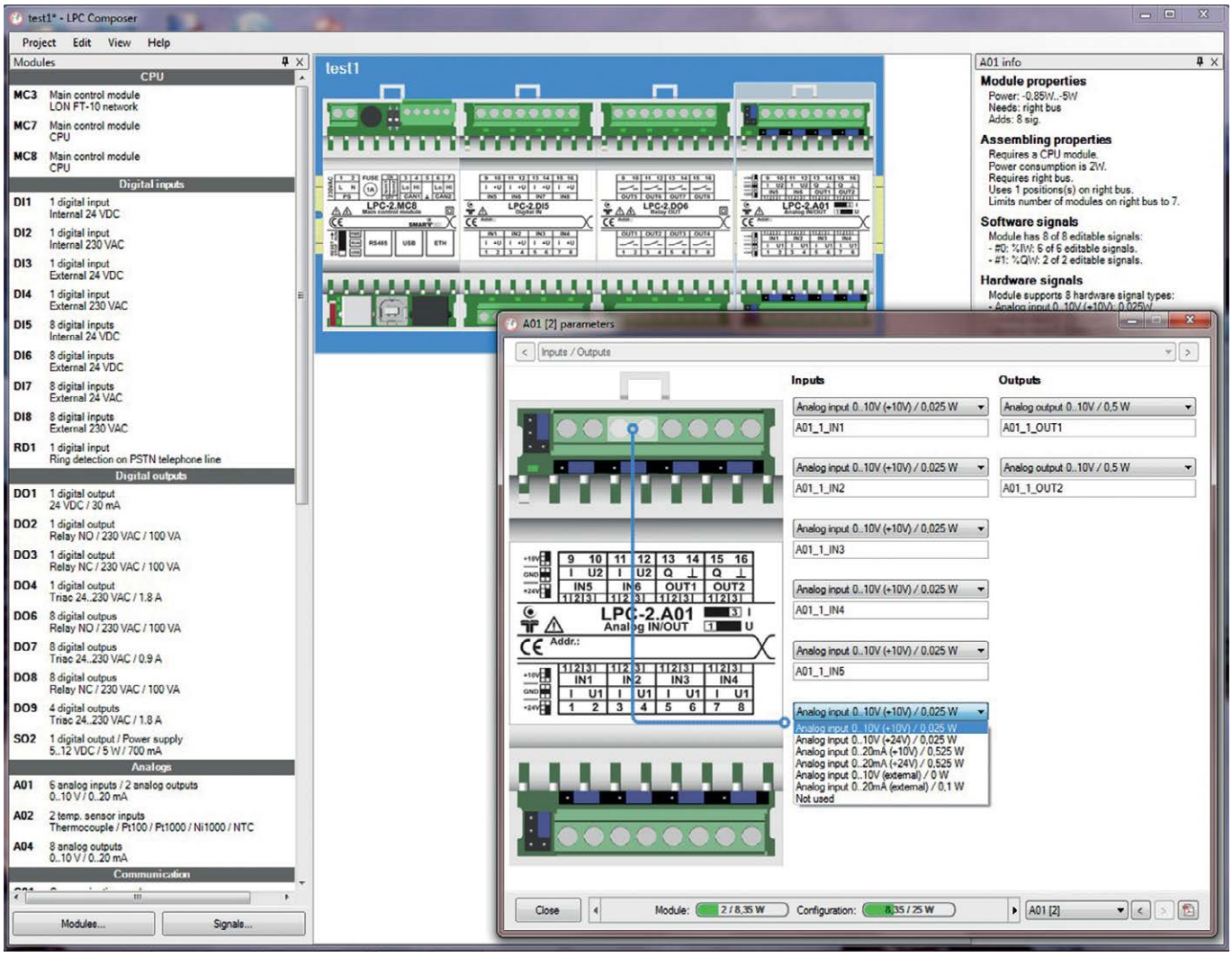
7.4.1. LPC Composer

LPC Composer software is a tool for programming LPC-2 controllers. It combines tools for composing PLC configurations and programming application logic.

It allows composing different configurations from available LPC-2 modules, taking care of all configuration rules and limitations. Default SW tags for connected modules are created automatically.

Composing configurations can be performed by using two wizards. Signal wizard calculates optimal number of modules, based on selected number of signals. Module wizard is used for assembling chosen modules in to optimum number of PLC configurations.

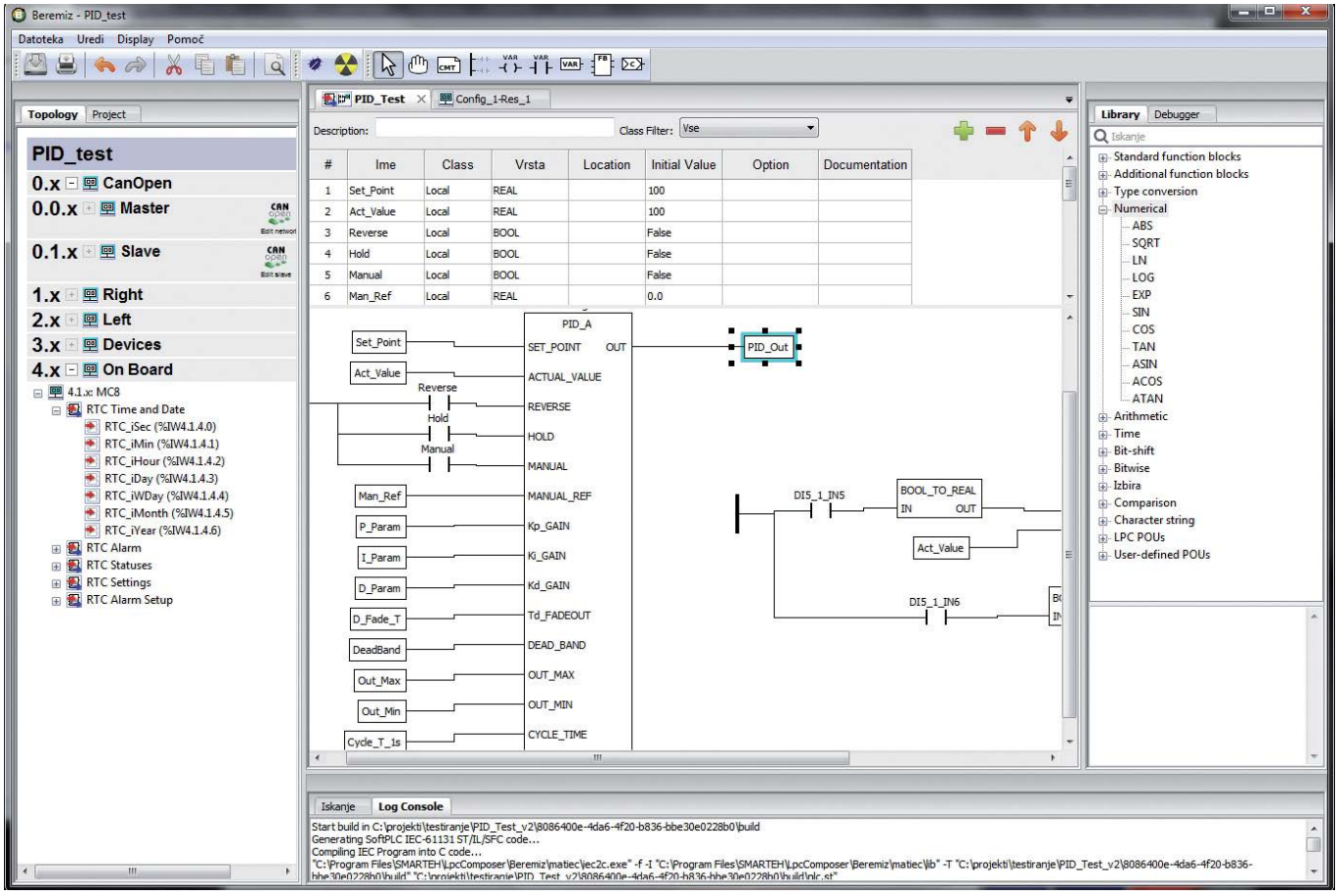
LPC Composer can be obtained from Smarteh's web page for free.


test1* - LPC Composer
Project Edit View Help
Modules
CPU
MC3 Main control module LON FT-10 network
MC7 Main control module CPU
MC8 Main control module CPU
Digital inputs
DI1 1 digital input Internal 24 VDC
DI2 1 digital input Internal 230 VAC
DI3 1 digital input External 24 VDC
DI4 1 digital input External 230 VAC
DI5 8 digital inputs Internal 24 VDC
DI6 8 digital inputs External 24 VDC
DI7 8 digital inputs External 24 VAC
DI8 8 digital inputs External 230 VAC
RD1 1 digital input Ring detection on PSTN telephone line
Digital outputs
DO1 1 digital output 24 VDC / 30 mA
DO2 1 digital output Relay NO / 230 VAC / 100 VA
DO3 1 digital output Relay NC / 230 VAC / 100 VA
DO4 1 digital output Triac 24..230 VAC / 1.8 A
DO6 8 digital outpus Relay NO / 230 VAC / 100 VA
DO7 8 digital outpus Triac 24..230 VAC / 0.9 A
DO8 8 digital outpus Relay NC / 230 VAC / 100 VA
DO9 4 digital outputs Triac 24..230 VAC / 1.8 A
SO2 1 digital output / Power supply 5..12 VDC / 5 W / 700 mA
Analogs
A01 6 analog inputs / 2 analog outputs 0..10 V / 0..20 mA
A02 2 temp. sensor inputs Thermocouple / Pt100 / Pt1000 / Ni1000 / NTC
A04 8 analog outputs 0..10 V / 0..20 mA
Communication
Modules...
Signals...
test1
A01 info
Module properties
Power: -0.85W..-5W
Needs: right bus
Adds: 8 sig.
Assembling properties
Requires a CPU module.
Power consumption is 2W.
Requires right bus.
Uses 1 positions(s) on right bus.
Limits number of modules on right bus to 7.
Software signals
Module has 8 of 8 editable signals:
- #0: %IW: 6 of 6 editable signals.
- #1: %QW: 2 of 2 editable signals.
Hardware signals
Module supports 8 hardware signal types:
A01 [2] parameters
Inputs / Outputs
Inputs
Outputs
Analog input 0..10V (+10V) / 0,025 W
A01_1_IN1
Analog output 0..10V / 0,5 W
A01_1_OUT1
A01_1_IN2
A01_1_OUT2
A01_1_IN3
A01_1_IN4
A01_1_IN5
Analog input 0..10V (+24V) / 0,025 W
Analog input 0..20mA (+10V) / 0,525 W
Analog input 0..20mA (+24V) / 0,525 W
Analog input 0..10V (external) / 0 W
Analog input 0..20mA (external) / 0,1 W
Not used
LPC-2.A01
Close
Module:
Configuration:
A01 [2]

sample of the LPC Composer - configuration

After final selection of modules made by composer we can select „programming“ from Project menu. Composed configuration is then switched to programming mode.

Programming mode in LPC Composer is used for development of software application for the selected hardware configuration. Programming editor supports following programming languages: IL (instruction list), ST (structured text), LD (ladder diagram), FBD (function block diagram) and SFC (sequential function chart).



sample of the LPC Composer – programming mode

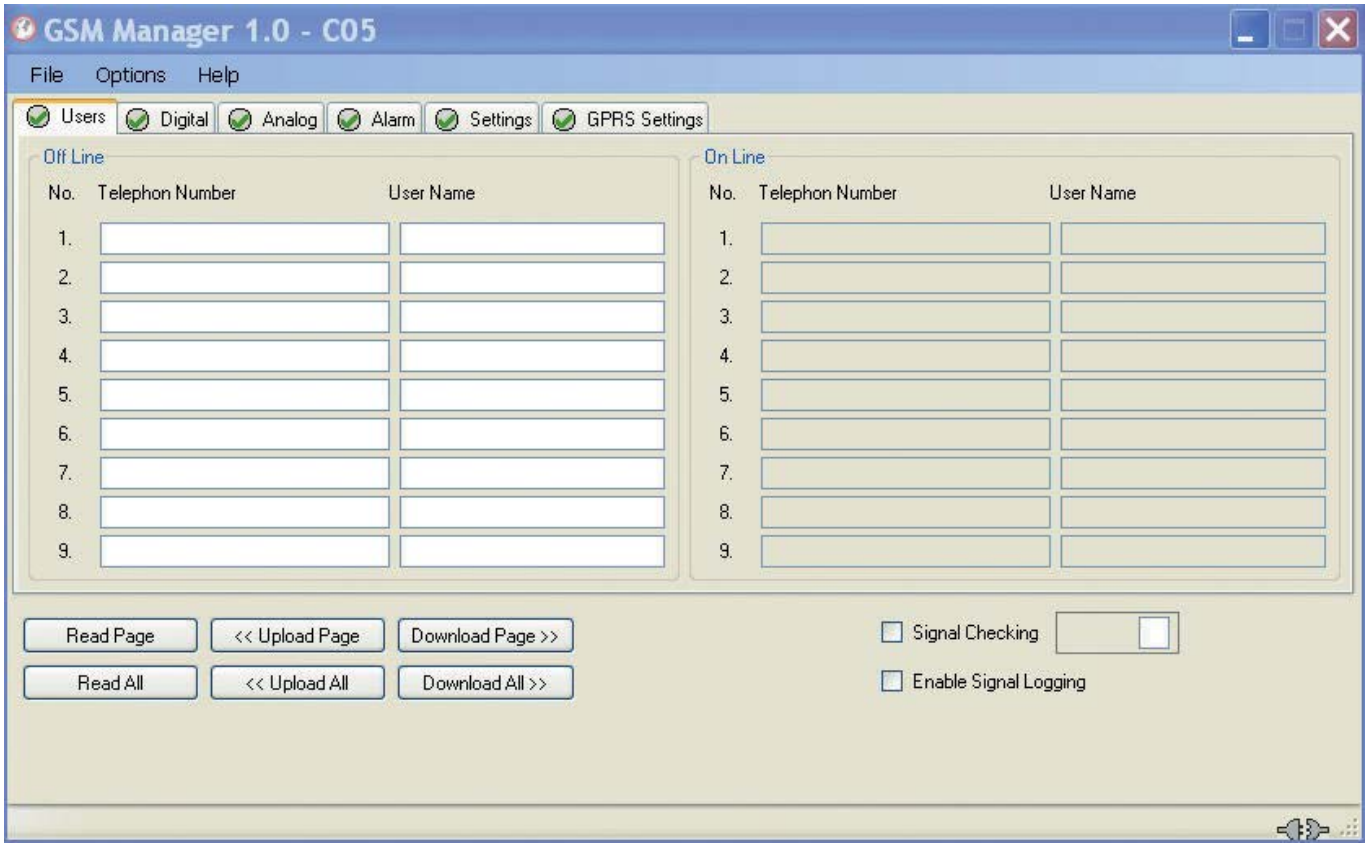
LPC Composer software has the following system requirements:

· Microsoft Windows XP or later
· Dot Net version 2.0 or later
· At least 1GB RAM
· 500 MB hard disk space
· USB port

7.4.2. GSM MANAGER

GSM Manager software is used for managing GSM modules. It allows parameterization and monitoring GSM module configuration.

It also allows executing manually entered AT commands and monitoring GSM module processing.



sample of the GSM Manager setting options

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